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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/420,945	10/19/1999	STEPHEN C. KENYON	213680.00004	3459

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EXAMINER	
BROWN, RUEBEN M	
ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/420,945	KENYON, STEPHEN C.	
	Examiner	Art Unit	
	Reuben M. Brown	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40 and 42-51* is/are rejected.

7)☒ Claim(s) *41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/11/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims have been considered but are not persuasive.

With respect to 'joint probability' recited in claim 1, the claimed feature is broad enough to read on the discussion in Kenyon of the 'cross correlation function', since 'cross correlation function' utilizes at least two waveforms calculation, col. 5, lines 5-30.

Considering claims 17-19, the amended feature of 'summing the pixel value', is met by col 12, lines 49-58.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-10, 12-17 & 19-33, 35-40 & 42-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenyon, (U.S. Pat # 4,843,562), in view of Ishihara, (U.S. Pat # 5,953,439).

Considering claim 1, the claimed apparatus for recognizing input data stream comprising a receiver for receiving the input data stream, and an interface for selecting any one portion of the received data stream, and forming a first plurality of feature time series waveforms corresponding to distinct portions of the received data stream is met by the disclosure of Kenyon, which teaches receiving broadcast information and processing the broadcast information to provide a plurality of analyzed waveforms, Abstract; col. 7, lines 35-58.

Regarding the specific feature of ' forming a first plurality of feature time series waveforms respectfully corresponding to distinct portions of the received data streams', Kenyon teaches "the input signal is analyzed and filtered to provide several low bandwidth analog channels, *each* of the these channels is fed to a feature generator where it is digitized to form a *feature data set* that is analyzed to determine if it matches one of the patterns in the first stage reference library", emphasis added, see col. 4, lines 52-60 & col. 10, lines 29-63, which reads on the claimed subject matter.

As for the recitation of an interface for randomly selecting portions of the data stream, Kenyon does not specifically discloses such a technique, nevertheless the claimed technique is taught by Ishihara, (col. 4, lines 58-61; col. 6, lines 63-67). Ishihara, which is also directed to

image analyzing & image recognition, teaches forming time series information of moving pictures, (Abstract; col. 4, lines 10-60 & col. 13, lines 40-67). It would have been obvious for one of ordinary skill in the art at the time the invention was made, to modify Kenyon with the technique of arbitrarily or randomly selecting portions of a data stream for analysis, at least for the desirable benefit of providing the system with increased flexibility.

As for the claimed feature of storing a second plurality of waveforms and correlating the first and second plurality of waveforms and designating a recognition when a joint probability of correlation between the first and second plurality of waveforms reaches a predetermined value, Kenyon discloses that a reference signals are also processed and stored in a large signature database, col. (col. 4, lines 44-51; col. 5, lines 5-45; col. 7, lines 4-21; col. 7, lines 54-56) Kenyon goes on to teach that the broadcast signals are compared to the reference signals, using a first stage classification see; col. 5, lines 4-31 & col. 8, lines 46-60, which meets the claimed processor structure for correlating the first and second feature time series waveforms.

The additionally claimed feature of designating a recognition when the a statistic of the correlation routine reaches a predetermined value, reads on the combination of Ishihara and Kenyon that detects when the amplitude level of the correlation function reaches a predetermined threshold; see (col. 5, lines 21-25; col. 5, lines 43-50; col. 7, lines 50-57).

Considering claims 2-3, Kenyon discloses that the invention is applicable to radio & TV broadcast signals, which includes audio & video data, col. 6, lines 48-56, also see Ishihara, col. 6, lines 47-49.

Considering claim 4, see col. 4, lines 46-52.

Considering claim 5, since Kenyon is directed to monitoring broadcast signals, it would have been obvious for one of ordinary skill in the art at the time the invention was made, to switch the tuner to receive a different input stream after, the current input stream has been identified, at least in order to more efficiently utilize the resources.

Considering claim 6, the claimed plurality of portions of the received data stream is broad enough to read on video data; in that odd field one overlaps the event field in order to form each frame of video data.

Considering claim 7, Kenyon teaches rank-ordering feature time series, col. 5, lines 20-45; col. 7, lines 12-16 & col. 8, lines 46-50. The claimed 'map of likely candidate patterns' reads on the disclosure in Kenyon, that the first stage references, which have not been rejected in the first stage classification process, are then queued according to their difference measurements, col. 5, lines 27-38; col. 7, lines 9-22 & col. 8, lines 46-53.

Considering claim 8, Kenyon discloses generating a most distinctive, i.e. descriptive value for different segments of the data stream, col. 16, lines 1-22.

Considering claim 9, Kenyon discloses normalizing the input data, col. 8, lines 28-30; col. 12, lines 51-55 & col. 15, lines 25-30.

Considering claim 10, Kenyon discloses that system process the signals using a time/frequency matrix, which reads a Fourier analysis; (col. 12, lines 45-50 & col. 13, lines 4-15). Moreover, it is more specifically discussed that Fourier transforms are used, col. 15, lines 23-24.

Considering claim 12, Kenyon teaches the well-known feature of time & date parameters are utilized, col. 5, lines 55-58.

Considering claim 13, the correlating function meets the claimed subject matter; Fig. 1, col. 5, lines 10-60 & col. 7, lines 50-67. Ishihara teaches random selection of data input, col. 4, lines 58-61; col. 6, lines 63-67.

Considering claim 14, Kenyon estimates false alarm probabilities, col. 9, lines 15-25.

Considering claim 15, Kenyon teaches zero-filling feature time series for expansion of the waveform, col. 8, lines 20-25; col. 14, lines 15-35; col 14, lines 60-64 & col. 15, lines 5-17.

Considering claim 16, see Kenyon, col. 5, lines 10-55 & col. 8, lines 55-65, which discusses the use of a cross correlation function. Kenyon does not explicitly state that the function generates correlation probability values. However, the disclosure of continuing to match the queued values with the second stage reference patterns, (i.e., correlate them) reads on a probability function, since the closer the difference between a queued value and the second stage reference pattern is to a maximum correlation value, then the higher the probability that a match has been found.

Considering claim 17, the claimed elements of an apparatus of forming video features from an input stream that corresponds with subject matter mentioned above in the rejection of claims 1, 3 & 6-8 are likewise analyzed. Kenyon, col. 7, lines 47-53 & col.10, lines 14-40, meets the further claimed feature of using low rate time series.

Ishihara discloses creating feature time series of various parameters from a video signal, such as tone of color or intensity of video image, col. 4, lines 9-25; col. 8, lines 11-15.

As for the additionally claimed feature of transforming the rank-ordered interval segments to produce complex spectra, it is disclosed that the input data undergoes a Fourier transform, col. 2, lines 58-65 & col. 15, lines 22-25. As for the newly added feature of 'summing the pixel values of at least one intensity and color', Kenyon col. 12, lines 40-60, still teaches the claimed subject matter.

Considering claim 19, the claimed elements of an apparatus of forming audio features from an input stream that corresponds with subject matter mentioned above in the rejection of claims 1, 6-8 & 19, are likewise analyzed. The additionally claimed feature of extracting energy from each of the plurality of frequency bands and integrating the extracted energy is met by col. 12, lines 1-40. It is taught that the input data is placed in energy bands and a summation is taken over the band series.

As for the additionally claimed feature of transforming the rank-ordered interval segments to produce complex spectra, it is disclosed that the input data undergoes a Fourier transform, col. 2, lines 58-65 & col. 15, lines 22-25.

Regarding the additional feature of integrating at least one of the intensity and color of the video signals, Ishihara discloses the time series may represent the change in tone of color of the moving picture, (col. 4, lines 10-30 & col. 15, lines 45-60), which reads on the claimed subject matter.

Considering claim 20, the claimed method of recognizing an input data stream corresponds with subject matter mentioned above in the rejection of claim 1, and is likewise analyzed.

As for the additionally claimed feature of rank ordering features of the first plurality of waveforms, reads on Kenyon, col. 5, lines 20-35 & col. 7, lines 5-30. The claimed 'map of candidate patterns' reads on the disclosure in Kenyon, that the first stage references, which have not been rejected in the first stage classification process, are then queued according to their difference measurements, col. 5, lines 27-38; col. 7, lines 9-22 & col. 8, lines 46-53.

Considering claim 21, the claimed method of forming video features from an input video stream corresponds with subject matter mentioned above in the rejection of claim 17, and is likewise analyzed.

As for the additionally claimed feature of averaging at least one the of the intensity and the color, Ishihara discloses among other image processing functions that may operate on the time series waveforms, smoothing, interpolation or averaging may occur, which reads on the claimed subject matter, col. 7, lines 58-64. Also see Kenyon, col. 10, lines 15-30, which discusses the advantages of averaging the input signal in a pre-processing stage, as a way of reducing the computation required.

Considering claim 22, the claimed method of forming audio features from an input audio stream corresponds with subject matter mentioned above in the rejection of claim 17, and is likewise analyzed.

Considering claim 23, the claimed features that correspond with subject matter mentioned above in the rejection of claims 1 & 20 are likewise analyzed. Furthermore, it is disclosed that the system is microprocessor based, thereby including the recitation of a computer readable storage medium that causes one or computers to perform the claimed subject matter; see col. 16, lines 39-48.

Considering claims 24-25, the claimed features that correspond with subject matter mentioned above in the rejection of claim 17 are likewise analyzed. Furthermore, it is disclosed that the system is microprocessor based, thereby including the recitation of a computer readable storage medium that causes one or computers to perform the claimed subject matter; see col. 16, lines 39-48.

Considering claim 26, the claimed features that correspond with subject matter mentioned above in the rejection of claim 20 are likewise analyzed. Furthermore, it is disclosed that the system is microprocessor based, thereby including the recitation of a computer readable storage medium that causes one or more computers to perform the claimed subject matter; see col. 16, lines 39-48.

Considering claim 27, the claimed features that correspond with subject matter mentioned above in the rejection of claims 1, 14 & 20 are likewise analyzed. The additionally claimed feature of correlating the most distinctive features of each stored pattern is met by col. 16, lines 1-25. The claimed features of estimating the probability that correlation value could occur from

a random event, rejection of those candidate patterns above a certain threshold and accepting the candidate pattern if above a threshold reads on col. 9, lines 15-25. Kenyon does not discuss that the estimating procedure is repeated for unresolved patterns. It would have been obvious for one of ordinary skill in the art at the time the invention was made, to also repeat the estimation process for unresolved patterns, for the desirable improvement of more accurately identifying the entire broadcast stream.

Considering claim 28, the claimed multiple feature streams grouped as frames of multiple frequency band energy sampled in time, reads on the plurality of spectragrams created for the input signal, col. 5, lines 5-20.

Considering claim 29, the claimed subject mater reads on the discussion of the most spectrally distinct feature, Kenyon col. 16, lines 1-10.

Considering claim 30, the claimed 'map of likely candidate patterns' reads on the disclosure in Kenyon, that the first stage references, which have not been rejected in the first stage classification process, are then queued according to their difference measurements, col. 5, lines 27-38; col. 7, lines 9-22 & col. 8, lines 46-53.

Considering claim 31, Official Notice is taken that error rate analysis was well known in the art at the time the invention was made. It would have been obvious for one of ordinary skill in the art at the time the invention was made to recognize values only when the error rate is

below a certain threshold, because otherwise the values may be considered unreliable, due to a high error rate.

Considering claim 32, Ishihara discusses the option of a monochromatic image, col. 13, lines 57-58.

Considering claim 33, it would have been obvious to integrate pixel values over distinct regions of a frame, at least in order to include a wider range of data.

Considering claim 35, Kenyon discusses the use of band pass filters 8, col. 10, lines 14-45.

Considering claim 36, Kenyon discusses the use of Fourier analysis, col. 15, lines 24-32, but not FFT. Furthermore, Ishihara discusses the use of FFT & DCT, col. 14, lines 25-30.

Considering claim 37, see Kenyon col. 7, lines 41-48.

Considering claims 38 & 43 the claimed subject matter reads o the disclosure in Kenyon of a minimum of 50% overlap for the segments, col. 14, lines 60-64.

Considering claims 39-40 & 49-50, rank ordering according to reliability is broad enough to read on ranking according to distinctness, since the distinction value of certain features may be considered an indication of reliability, se Kenyon col. 16, lines 1-10.

Considering claims 42 & 44-48, the combination of Kenyon and Ishihara reads on input stream, being audio, video or a combination. Kenyon is directed to using time series waveforms.

Considering claim 51, table of links to the most likely patterns reads on the disclosure in Kenyon, that the first stage references, which have not been rejected in the first stage classification process, are then queued according to their difference measurements, col. 5, lines 27-38; col. 7, lines 9-22 & col. 8, lines 46-53

4. Claims 11, 18 & 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenyon, in view of Mobin, (U.S. Pat # 6,532,273).

Considering claim 11, Kenyon does not discuss performing a decimation function on the data stream. However, Mobin discloses that polyphase decimation filtering is used to filter multiple phases of an input signal, for instance odd & even fields of an interlaced TV signal; see Abstract; col. 2, lines 21-45 & col. 3, lines 60-67. It would have been obvious for one of ordinary skill in the art at the invention was made to modify Kenyon, with technique of

decimation filtering at least for the benefit of handling filtering of a video stream at higher speeds, as taught by Mobin, col. 1, lines 12-22.

As for claim 34, both Kenyon & Ishihara discuss the benefits of time averaging.

Allowable Subject Matter

5. Claims 41 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Continued Examination Under 37 CFR 1.114

6. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/10/2004 has been entered.

Any response to this action should be mailed to:

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or faxed to:
(571) 273-8300, (for formal communications intended for entry)
Or:
(571) 273-7290 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reuben M. Brown whose telephone number is (571) 272-7290. The examiner can normally be reached on M-F (9:00-6:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Grant can be reached on (571) 272-7294. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300 for regular communications and After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Reuben M. Brown

REUBEN M. BROWN
PATENT EXAMINER